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EXAMINER	
ETTEHADIEH, ASLAN	

ART UNIT	PAPER NUMBER
2611	

DATE MAILED: 10/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/642,886	SHOR ET AL.	
	Examiner	Art Unit	
	Aslan Ettehadieh	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 August 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/19/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because elements in figures 1 – 4 are not clear. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be 3\canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities: please change transmisstion to transmission (specification page 14 line 4 or US 20040077306 paragraph 51).

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1, 2, 6, 11, 12, 18, 39, 40 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim what is allowing variation. There is no step for providing a positive recitation for allowing variation to occur, thus the limitation is not given much weight to the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1 – 7, 11, 12, 15 – 24, 30, 39 are rejected under 35 U.S.C. 102(e) as being anticipated by Aiello et al. (US 6952456; which discloses same inventors as applicant's admitted prior art of WO 01/99300)

6. Regarding claim 1, Aiello discloses a method for transmitting information using ultra-wide band transmission, the method comprising:

allocating, for signal transmission, each of a plurality of frequency sub-bands (col. 1 lines 53 – 55, col. 2 lines 8 – 10; where the channel being subdivided into a large number of non-overlapping frequency slots is being interpreted as frequency sub-bands); and

sending an ultra-wide band transmission comprising the information by transmitting a signal over each of the plurality of frequency sub-bands (col. 1 lines 53 – 55, col. 2 lines 8 – 10, col. 4 lines 20 – 21); and

allowing variation of at least one transmission parameter to facilitate trade-off between at least two of power consumption, energy collection, bit rate, performance, range, resistance to multiple access interference, and resistance to multipath interference and spectral flatness (col. 11 lines 12 – 23, col. 5 lines 64 – 67, col. 6 lines 9 – 19, col. 1 lines 22 – 25, col. 4 lines 20 – 21;where the variation is the variable pulse repetition frequencies (PRF), where bit rate is shown in col. 11 line18, where resistance to multiple access interference is shown in col. 11 line 21, col. 1 lines, col. 4 lines 20 – 21) . Aiello also shows allowing variation of at least one transmission parameter to facilitate trade-off between at least two of power consumption, energy collection, bit rate, performance, range, resistance to multiple access interference, and resistance to multipath interference and spectral flatness (col. 5 lines 53 – 67, col. 6 lines 9 – 19, col. 6 lines 9 – 19, col. 7 lines 9 – 19;where range is show in col. 5 lines 64 – 67, where power consumption is shown in col. 5 lines 53 – 67, col. 6 lines 9 – 19, col. 7 lines 9 –

19, col. 16 lines 1 – 11, and where it is also inherent that different bit rates, modulation with on-off keying and variable PRF, etc. would provide for power consumption, where energy collection is shown in col. 7 lines 9 – 19).

7. Regarding claim 39, Aiello discloses all limitations of claim 39 as analyzed in claim 1 above.

8. Regarding claim 2, Aiello discloses allowing variation of pulse repetition frequency (col. 2 lines 44 – 46, col. 7 lines 19 – 30, col. 10 lines 50 – 64, col. 11 lines 12 – 23).

9. Regarding claim 3, Aiello discloses wherein sending an ultra-wide band transmission comprises sending a burst symbol cycle transmission (figure 9b element 236, col. 16 line 56 – col. 17 line 5).

10. Regarding claim 15, Aiello discloses all limitations of claim 15 as analyzed in claim 3 above.

11. Regarding claim 4, Aiello discloses sending a burst symbol cycle signal over each of the frequency sub-bands (col. 1 lines 53 – 55, col. 2 lines 8 – 10, col. 4 lines 20 – 21, col. 16 line 56 – col. 17 line 5, figure 9b element 236).

12. Regarding claim 5, Aiello discloses all limitations of claim 5 as analyzed in claim 3 above.

13. Regarding claim 16, Aiello discloses all limitations of claim 16 as analyzed in claim 4 above.

14. Regarding claim 17, Aiello discloses all limitations of claim 17 as analyzed in claim 3 above.

15. Regarding claim 6, Aiello discloses allowing variation of at least one transmission parameter in order to adapt to varying application requirements (col. 3 lines 10 – 29).

16. Regarding claim 7, Aiello discloses automatically varying at least one transmission parameter in order to adapt to at least one of varying application requirements and environment requirements (col. 3 lines 10 – 29, col. 11 lines 12 – 23).

17. Regarding claim 11, Aiello discloses a method for receiving information using ultra-wide band transmission, the method comprising:

allocating, for signal transmission, each of a plurality of frequency sub-bands (col. 1 lines 53 – 55, col. 2 lines 8 – 10; where the channel being subdivided into a large number of non-overlapping frequency slots is being interpreted as frequency sub-bands); and

receiving an ultra-wide band transmission comprising the information by receiving signals transmitted over each of the plurality of frequency sub-bands (col. 1 lines 53 – 61, col. 2 lines 8 – 21, col. 4 lines 20 – 21; col. 5 lines 24 – 44); and

allowing variation of at least one transmission parameter to facilitate trade-off between at least two of power consumption, energy collection, bit rate, performance, range, resistance to multiple access interference, and resistance to multipath interference and spectral flatness (col. 11 lines 12 – 23, col. 5 lines 64 – 67, col. 6 lines 9 – 19, col. 1 lines 22 – 25, col. 4 lines 20 – 21;where the variation is the variable pulse repetition frequencies (PRF), where bit rate is shown in col. 11 line18, where resistance to multiple access interference is shown in col. 11 line 21, col. 1 lines, col. 4 lines 20 – 21) . Aiello also shows allowing variation of at least one transmission parameter to

facilitate trade-off between at least two of power consumption, energy collection, bit rate, performance, range, resistance to multiple access interference, and resistance to multipath interference and spectral flatness (col. 5 lines 53 – 67, col. 6 lines 9 – 19, col. 6 lines 9 – 19, col. 7 lines 9 – 19;where range is show in col. 5 lines 64 – 67, where power consumption is shown in col. 5 lines 53 – 67, col. 6 lines 9 – 19, col. 7 lines 9 – 19, col. 16 lines 1 – 11, and where it is also inherent that different bit rates, modulation with on-off keying and variable PRF, etc. would provide for power consumption, where energy collection is shown in col. 7 lines 9 – 19).

18. Regarding claim 12, Aiello discloses allowing variation of received pulse repetition frequency (col. 2 lines 44 – 46, col. 7 lines 19 – 30, col. 10 lines 50 – 64, col. 11 lines 12 – 23).

19. Regarding claim 18, Aiello discloses method for communicating information using ultra-wide band transmission and reception, the method comprising:

allocating, for signal transmission, each of a plurality of frequency sub-bands (col. 1 lines 53 – 55, col. 2 lines 8 – 10; where the channel being subdivided into a large number of non-overlapping frequency slots is being interpreted as frequency sub-bands); and

sending an ultra-wide band transmission comprising the information by transmitting a signal over each of the plurality of frequency sub-bands (col. 1 lines 53 – 55, col. 2 lines 8 – 10, col. 4 lines 20 – 21);

receiving an ultra-wide band transmission comprising the information by receiving signals transmitted over each of the plurality of frequency sub-bands (col. 1 lines 53 – 61, col. 2 lines 8 – 21, col. 4 lines 20 – 21; col. 5 lines 24 – 44); and

allowing variation of at least one transmission parameter to facilitate trade-off between at least two of power consumption, energy collection, bit rate, performance, range, resistance to multiple access interference, and resistance to multipath interference and spectral flatness (col. 11 lines 12 – 23, col. 5 lines 64 – 67, col. 6 lines 9 – 19, col. 1 lines 22 – 25, col. 4 lines 20 – 21;where the variation is the variable pulse repetition frequencies (PRF), where bit rate is shown in col. 11 line18, where resistance to multiple access interference is shown in col. 11 line 21, col. 1 lines, col. 4 lines 20 – 21) . Aiello also shows allowing variation of at least one transmission parameter to facilitate trade-off between at least two of power consumption, energy collection, bit rate, performance, range, resistance to multiple access interference, and resistance to multipath interference and spectral flatness (col. 5 lines 53 – 67, col. 6 lines 9 – 19, col. 6 lines 9 – 19, col. 7 lines 9 – 19;where range is show in col. 5 lines 64 – 67, where power consumption is shown in col. 5 lines 53 – 67, col. 6 lines 9 – 19, col. 7 lines 9 – 19, col. 16 lines 1 – 11, and where it is also inherent that different bit rates, modulation with on-off keying and variable PRF, etc. would provide for power consumption, where energy collection is shown in col. 7 lines 9 – 19).

20. Regarding claim 19, Aiello discloses a method for transmitting information using ultra-wide band transmission, the method comprising:

allocating, for signal transmission, each of a plurality of frequency sub-bands (col. 1 lines 53 – 55, col. 2 lines 8 – 10; where the channel being subdivided into a large number of non-overlapping frequency slots is being interpreted as frequency sub-bands); and

sending an ultra-wide band transmission comprising the information by transmitting a signal over each of the plurality of frequency sub-bands (col. 1 lines 53 – 55, col. 2 lines 8 – 10, col. 4 lines 20 – 21); and

setting at least one transmission parameter to facilitate a desired trade-off between at least two of power consumption, energy collection, bit rate, performance, range, resistance to multiple access interference, and resistance to multipath interference and spectral flatness (col. 11 lines 12 – 23, col. 5 lines 64 – 67, col. 6 lines 9 – 19, col. 1 lines 22 – 25, col. 4 lines 20 – 21;where setting at least one transmission parameter is the variable pulse repetition frequencies (PRF), where bit rate is shown in col. 11 line18, where resistance to multiple access interference is shown in col. 11 line 21, col. 1 lines, col. 4 lines 20 – 21) . Aiello also shows setting at least one transmission parameter to facilitate a desired trade-off between at least two of power consumption, energy collection, bit rate, performance, range, resistance to multiple access interference, and resistance to multipath interference and spectral flatness (col. 5 lines 53 – 67, col. 6 lines 9 – 19, col. 6 lines 9 – 19, col. 7 lines 9 – 19; where range is show in col. 5 lines 64 – 67, where power consumption is shown in col. 5 lines 53 – 67, col. 6 lines 9 – 19, col. 7 lines 9 – 19, col. 16 lines 1 – 11, and where it is also inherent that

different bit rates, modulation with on-off keying and variable PRF, etc. would provide for power consumption, where energy collection is shown in col. 7 lines 9 – 19).

21. Regarding claim 20, Aiello discloses setting pulse repetition frequency (col. 2 lines 44 – 46, col. 7 lines 19 – 30, col. 10 lines 50 – 64, col. 11 lines 12 – 23).

22. Regarding claim 21, Aiello discloses a method for transmitting information using ultra-wide band transmission, the method comprising:

allocating, for signal transmission, each of a plurality of frequency sub-bands (col. 1 lines 53 – 55, col. 2 lines 8 – 10; where the channel being subdivided into a large number of non-overlapping frequency slots is being interpreted as frequency sub-bands); and

sending an ultra-wide band transmission comprising the information by transmitting a signal over each of the plurality of frequency sub-bands (col. 1 lines 53 – 55, col. 2 lines 8 – 10, col. 4 lines 20 – 21); and

varying pulse repetition frequencies to facilitate trade-off between at least two of power consumption, energy collection, bit rate, performance, range, resistance to multiple access interference, and resistance to multipath interference and spectral flatness (col. 11 lines 12 – 23, col. 5 lines 64 – 67, col. 6 lines 9 – 19, col. 1 lines 22 – 25, col. 4 lines 20 – 21; where bit rate is shown in col. 11 line18, where resistance to multiple access interference is shown in col. 11 line 21, col. 1 lines, col. 4 lines 20 – 21) . Aiello also shows varying pulse repetition frequencies to facilitate trade-off between at least two of power consumption, energy collection, bit rate, performance, range, resistance to multiple access interference, and resistance to multipath interference and

spectral flatness (col. 5 lines 53 – 67, col. 6 lines 9 – 19, col. 6 lines 9 – 19, col. 7 lines 9 – 19;where range is show in col. 5 lines 64 – 67, where power consumption is shown in col. 5 lines 53 – 67, col. 6 lines 9 – 19, col. 7 lines 9 – 19, col. 16 lines 1 – 11, and where it is also inherent that different bit rates, modulation with on-off keying and variable PRF, etc. would provide for power consumption, where energy collection is shown in col. 7 lines 9 – 19).

23. Regarding claim 22, Aiello discloses varying pulse repetition frequency comprises varying of spacing of frequencies in a sequence (figure 9b element 236, col. 16 line 56 – col. 17 line 5).

24. Regarding claim 23, Aiello discloses varying pulse repetition frequency comprises replacing selected frequencies in a sequence with off periods (figure 9b element 236, col. 3 lines 10 – 15, col. 7 lines 20 – 30, col. 11 lines 24 – 35, col. 16 lines 1 – 10, col. 16 line 56 – col. 17 line 5).

25. Regarding claim 24, Aiello discloses pulse repetition frequency is varied according to at least one of a particular application and a particular environment (col. 3 lines 10 – 29, col. 11 lines 12 – 23).

26. Regarding claim 30, Aiello discloses varying pulse repetition frequency of pulse transmission (figure 9b element 236, col. 16 line 56 – col. 17 line 5, col. 11 lines 12 – 23, col. 5 lines 64 – 67, col. 6 lines 9 – 19, col. 1 lines 22 – 25, col. 4 lines 20 – 21)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

27. Claims 8, 9, 13, 25, 26, 31, 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aiello et al. (US 6952456; which discloses same inventors as applicant's admitted prior art of WO 01/99300).

28. Regarding claim 8, Aiello discloses varying at least one transmission parameter in order to adapt to at least one of varying application requirements and environment requirements (col. 3 lines 10 – 29, col. 11 lines 12 – 23). Aiello is not explicit about using one or more algorithms to facilitate varying, however, it would have been obvious to one skilled in the art at the time of invention was made to use one or more algorithms to facilitate varying in the system of Aiello to because it is common in the art to have to use at least one algorithm to implement functionality in software to provide less hardware thus reducing cost (figure 4 element 74, col. 3 lines 10 – 29, col. 11 lines 12 – 23).

29. Regarding claim 9, Aiello discloses sending an ultra-wide band transmission (col. 1 lines 53 – 55, col. 2 lines 8 – 10, col. 4 lines 20 – 21), and comprises using at least one of cyclic prefix transmission, zero padding, and a combination of cyclic prefix transmission and zero padding (col. 8 lines 44 – 56). Aiello is not explicit about using orthogonal frequency division multiplexing (OFDM), however, it would have been obvious to one skilled in the art at the time of invention was made to use orthogonal frequency division multiplexing in the system of Aiello to because OFDM is a robust technique for efficiently transmitting data over a channel providing optimal bandwidth

efficiency. Further OFDM allows resolution and recovery of information that has been modulated onto each sub-carrier.

30. Regarding claim 31, Aiello discloses all limitations of claim 31 as analyzed in claim 9 above.

31. Regarding claim 13, Aiello does not disclose reducing power consumption by shutting off the receiver at least one of during off periods, during anticipated redundant symbols, and during anticipated noisy symbols; however, it would have been obvious to one skilled in the art at the time of invention was made to use reducing power consumption by shutting off the receiver at least one of during off periods, during anticipated redundant symbols, and during anticipated noisy symbols in the system of Aiello to because shutting off the receiver at least one of during off periods reduces power consumption. Reducing power consumption by shutting off the receiver at least one of during off periods was well know in the art at the time the invention was made as can be seen in the references cited in Other prior art cited section below.

32. Regarding claim 25, Aiello discloses varying pulse repetition frequency according to at least one of varying application requirements and varying environmental requirements (col. 3 lines 10 – 29, col. 11 lines 12 – 23). Aiello does not disclose an adaptive process, however it is well known in the art at the time that the invention was made to apply an adaptive process to more accurate determination of a selection process thus providing more efficiency performance.

33. Regarding claim 26, Aiello discloses varying pulse repetition frequency (col. 11 lines 12 – 23, col. 5 lines 64 – 67, col. 6 lines 9 – 19, col. 1 lines 22 – 25, col. 4 lines 20

– 21). Aiello is not explicit about using one or more algorithms to facilitate varying, however, it would have been obvious to one skilled in the art at the time of invention was made to use one or more algorithms to facilitate varying in the system of Aiello to because it is common in the art to have to use at least one algorithm to implement functionality in software to provide less hardware thus reducing cost (figure 4 element 74, col. 3 lines 10 – 29, col. 11 lines 12 – 23). Aiello does not disclose an adaptive process, however it is well known in the art at the time that the invention was made to apply an adaptive process to more accurate determination of a selection process thus providing more efficiency performance.

34. Regarding claim 27, Aiello discloses all limitations of claim 27 as analyzed in claim 26 above.

35. Regarding claim 40, Aiello discloses a system for communicating information using ultra-wide band transmission and reception, the system comprising:

a transmitter for: sending an ultra-wide band transmission comprising the information by transmitting a signal over each of a plurality of frequency sub-bands (col. 1 lines 53 – 55, col. 2 lines 8 – 10, col. 4 lines 20 – 21); and

a receiver for: receiving an ultra-wide band transmission comprising the information by receiving signals transmitted over each of a plurality of frequency sub-bands (col. 1 lines 53 – 61, col. 2 lines 8 – 21, col. 4 lines 20 – 21; col. 5 lines 24 – 44);

wherein the system allows for at least one of selection of and variation of at least one of one or more transmission parameters and one or more reception parameters to provide trade-off between at least two of power consumption, bit rate, performance,

range, and resistance to multipath interference and spectral flatness (col. 11 lines 12 – 23, col. 5 lines 64 – 67, col. 6 lines 9 – 19, col. 1 lines 22 – 25, col. 4 lines 20 – 21;where the variation is the variable pulse repetition frequencies (PRF), where bit rate is shown in col. 11 line18, where resistance to multiple access interference is shown in col. 11 line 21, col. 1 lines, col. 4 lines 20 – 21) . Aiello also shows allowing variation of at least one transmission parameter to facilitate trade-off between at least two of power consumption, energy collection, bit rate, performance, range, resistance to multiple access interference, and resistance to multipath interference and spectral flatness (col. 5 lines 53 – 67, col. 6 lines 9 – 19, col. 6 lines 9 – 19, col. 7 lines 9 – 19;where range is show in col. 5 lines 64 – 67, where power consumption is shown in col. 5 lines 53 – 67, col. 6 lines 9 – 19, col. 7 lines 9 – 19, col. 16 lines 1 – 11, and where it is also inherent that different bit rates, modulation with on-off keying and variable PRF, etc. would provide for power consumption, where energy collection is shown in col. 7 lines 9 – 19). Aiello does not disclose an adaptive process, however it is well known in the art at the time that the invention was made to apply an adaptive process to more accurate determination of a selection process thus providing more efficiency performance.

36. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aiello et al. (US 6952456; which discloses same inventors as applicant's admitted prior art of WO 01/99300) in view of Fu et al. (US 2003/0026200).

37. Regarding claim 10, Aiello discloses allowing variation in time spreading (figure 9b element 236, col. 16 line 56 – col. 17 line 5) while sending information multiple times in a single sub-band as well as in different sub-bands (col. 1 lines 53 – 55, col. 2 lines 8

– 10, col. 4 lines 20 – 21). Aiello does not disclose sending identical information multiple times.

In the same field of endeavor, however, Fu discloses sending identical information multiple times (paragraph 44, figure 6).

Therefore it would have been obvious to one skilled in the art at the time of invention was made to use sending identical information multiple times as well as in different sub-bands as taught by Fu in the system of Aiello to expend the transmission diversity (paragraph 44).

38. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aiello et al. (US 6952456; which discloses same inventors as applicant's admitted prior art of WO 01/99300) in view of Aiello et al. (US 7088795, hereinafter Aiello2; which also discloses same inventors as applicant's admitted prior art of WO 01/99300).

39. Regarding claim 14, Aiello discloses comprising varying bit number based on variation in at least one of an application and environmental requirements (col. 3 lines 10 – 29, col. 4 lines 20 – 40, col. 11 lines 12 – 23). Aiello does not explicitly disclose an ADC converter, however, Aiello2 does disclose an ADC (col. 15 lines 30 – 67) where it would have been obvious to one skilled in the art at the time of invention was made to use an ADC converter as taught by Aiello2 in the system of Aiello to perform the function of comprising varying bit number based on variation in at least one of an application and environmental requirements to allow for appropriate sampling times (col. 15 lines 63).

40. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aiello et al. (US 6952456; which discloses same inventors as applicant's admitted prior art of WO 01/99300) in view of Voigtlaender et al. (US 2002/0130811).

41. Regarding claim 29, Aiello does not disclose reducing pulse repetition frequency to increase notch filter selectivity allows a chip implementation of one or more filters.

In the same field of endeavor, however, Voigtlaender discloses reducing pulse repetition frequency to increase notch filter selectivity allows a chip implementation of one or more filters (paragraph 46).

Therefore it would have been obvious to one skilled in the art at the time of invention was made to use reducing pulse repetition frequency to increase notch filter selectivity allows a chip implementation of one or more filters as taught by Voigtlaender in the system of Aiello to eliminate interference (paragraph 46).

42. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aiello et al. (US 6952456; which discloses same inventors as applicant's admitted prior art of WO 01/99300) in view of Gresham et al. (US 2003/0193430).

43. Regarding claim 32, as shown above Aiello discloses varying pulse repetition frequency. Aiello does not disclose varying pulse repetition frequency to reduce cross-band interference.

In the same field of endeavor, however, Gresham discloses varying pulse repetition frequency to reduce cross-band interference (paragraph 7, 24).

Therefore it would have been obvious to one skilled in the art at the time of invention was made to use varying pulse repetition frequency to reduce cross-band

interference as taught by Gresham in the system of Aiello to reduce interference (paragraph 7, 24).

44. Claims 33, 34, 35, 36, 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aiello et al. (US 6952456; which discloses same inventors as applicant's admitted prior art of WO 01/99300) in view of Goodings (US 2004/0013166).

45. Regarding claim 33, Aiello discloses comprising reducing pulse repetition frequency to mitigate interference between two or more pico-nets that each use a frequency hopping sequence (col. 1 lines 53 – 61, col. 2 lines 30 – 31, 50 – 53, col. 4 lines 20 – 32, 45 – 59). Aiello not specific about different frequency hopping sequence

In the same field of endeavor, however, Goodings discloses different frequency hopping sequence (paragraph 15).

Therefore it would have been obvious to one skilled in the art at the time of invention was made to use different frequency hopping sequence as taught by Goodings in the system of Aiello to reduce redundancy (paragraph 15).

46. Regarding claim 34, Aiello discloses reducing pulse repetition frequency by removing selected frequencies in a sequence and replacing them with off periods (col. 3 lines 10 – 15, col. 7 lines 19 – 30).

47. Regarding claims 35 and 36, Aiello discloses reducing pulse repetition frequency by a factor of two by removing one out of every two consecutive frequencies (col. 3 lines 10 – 15, col. 7 lines 19 – 30, col. 11 lines 12 – 23, col. 5 lines 64 – 67, col. 6 lines 9 – 19, col. 1 lines 22 – 25, col. 4 lines 20 – 21; where it is inherent that by removing one

out of every two consecutive frequencies would result by reducing the pulse repetition frequency by a factor of two, and the same would hold true for three, etc.).

48. Regarding claim 37, Aiello discloses all limitations of claim 37 as analyzed in claim 33 above.

49. Claim 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aiello et al. (US 6952456; which discloses same inventors as applicant's admitted prior art of WO 01/99300) in view of Santhoff et al. (US 2004/0022304).

50. Regarding claim 38, Aiello discloses a method for transmitting information using ultra-wide band transmission, the method comprising: allocating, for signal transmission, each of a plurality of frequency sub-bands (col. 1 lines 53 – 55, col. 2 lines 8 – 10; where the channel being subdivided into a large number of non-overlapping frequency slots is being interpreted as frequency sub-bands); and sending an ultra-wide band transmission comprising the information by transmitting a signal over each of the plurality of frequency sub-bands (col. 1 lines 53 – 55, col. 2 lines 8 – 10, col. 4 lines 20 – 21); and setting pulse repetition frequency to mitigate interference (col. 11 lines 12 – 23, col. 5 lines 64 – 67, col. 6 lines 9 – 19, col. 1 lines 22 – 25, col. 4 lines 20 – 21). Aiello does discloses inter-symbol interference (ISI).

In the same field of endeavor, however, Santhoff discloses optimizing pulse reliability, which in UWB transmission considers issues of ISI by controlling the pulse repetition frequency.

Therefore it would have been obvious to one skilled in the art at the time of invention was made to use optimizing pulse reliability, which in UWB transmission

considers issues of ISI by controlling the pulse repetition frequency as taught by Santhoff in the system of Aiello to provide better pulse reliability.

Other prior art cited

51. The prior art made of record and not relies upon is considered pertinent to applicant's disclosure.

52. McDonough et al. (US 2003/0043766) discloses reducing power consumption by shutting off the receiver at least one of during off periods (abstract, paragraph 4).

53. Greszczuk et al. (US 2002/0150152) discloses reducing power consumption by shutting off the receiver at least one of during off periods (paragraphs 34 – 36).

54. Jones (US 2004/0013167) discloses reducing power consumption by shutting off the receiver at least one of during off periods (abstract, claim 1).

55. McDonough et al. (US 2003/0002566) discloses reducing power consumption by shutting off the receiver at least one of during off periods (paragraph 5).

56. Sudo et al. (US 20020054622) reducing power consumption by shutting off the receiver at least one of during off periods (abstract).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aslan Ettehadieh whose telephone number is (571) 272-8729. The examiner can normally be reached on Monday - Friday, 8:00am - 4:30pm.

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